UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,378	12/03/2003	Wei Fan	YOR920030321US1	3137

48150 7590 08/31/2006

MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER	
COUGHLAN, PETER D	

ART UNIT	PAPER NUMBER
2129	

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,378	FAN ET AL.	
	Examiner	Art Unit	
	Peter Coughlan	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/3/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1. Claims 1-33 are pending in this application.

35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-33 are rejected under 35 U.S.C. 101 for nonstatutory subject matter. The computer system must set forth a practical application of that § 101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77. The invention is ineligible because it has not been limited to a substantial practical application. An inductive learning method by itself has no practical application. The result has to be a practical application. Please see the interim guidelines for examination of patent applications for patent subject matter eligibility published November 22, 2005 in the official gazette.

In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed

invention is "useful, tangible and concrete." If the claim is directed to a practical application of the § 101 judicial exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. Phrases such as 'inductive learning model', 'processing an inductive learning model' and 'a system to process an inductive learning model' all generate a inductive learning model but there is no stated real world practical application for such a device.

The invention must be for a practical application and either:

1) specify transforming (physical thing) or

2) have the FINAL RESULT (not the steps) achieve or produce a

useful (specific, substantial, AND credible),

concrete (substantially repeatable/ non-unpredictable), AND

tangible (real world/ non-abstract) result.

A claim that is so broad that it reads on both statutory and non-statutory subject matter, must be amended, and if the specification discloses a practical application but the claim is broader than the disclosure such that it does not require the practical application, then the claim must be amended.

Claims that recites a method or system that computes a inductive algorithm which solely calculates a mathematical response without a purpose or function is not statutory.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-33 are rejected under 35 U.S.C. 102(a) (hereinafter referred to as **Fan**) being anticipated by Fan, 'Progressive Modeling'.

Claim 1

Fan anticipates dividing said dataset into a plurality of subsets of data (**Fan,** p164, C1:38 through C2:9); and developing an estimated learning model for said dataset by developing a learning model for a first subset of said plurality of subsets. (**Fan,** p163, C2:11-16; 'Learning model' of applicant is equivalent to 'progressive modeling' of Fan.)

Claim 2

Fan anticipates progressively forming an ensemble model of said dataset by sequentially developing a learning model for each of a successive one of said plurality of subsets (**Fan,** abstract, 'Learning model' of applicant is equivalent to 'learning algorithm' of Fan.), until a desired indication of termination has been reached. (**Fan,** p165, C2:31-41)

Claim 3

Fan anticipates developing at least one of a current accuracy and an estimated final accuracy, said current accuracy comprising an accuracy of said learning model for said first subset, said estimated final accuracy comprising an estimated accuracy of said estimated learning model for said dataset. (**Fan,** l163, C2:16 through p164, C1:13; 'First subset' of applicant is this example (due to progressive modeling) is 'intermediate models' of Fan.)

Claim 4

Fan anticipates developing at least one of a current accuracy and an estimated final accuracy, said current accuracy comprising an accuracy of said learning model for said subset being currently developed, said estimated final accuracy comprising an estimated accuracy of said ensemble model of said dataset. (**Fan,** l163, C2:16 through p164, C1:13; 'Subsets being currently developed' of applicant is equivalent to 'intermediate models' of Fan.)

Claim 5

Fan anticipates developing an estimated training time to complete development of said ensemble model. (**Fan,** p166, C1:10-13)

Claim 6

Fan anticipates each said example in said dataset carries a benefit and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits. (**Fan,** p163, C2:16 through p164, C1:13)

Claim 7

Fan anticipates said benefit is not equal for all said examples, said learning comprising a cost-sensitive learning, and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits in units of money. (**Fan,** p163, C2:16 through p164, C1:13; 'Units of money' of applicant is equivalent to 'dollar amounts' of Fan.)

Claim 8

Fan anticipates a database divider for dividing said dataset into N subsets of data (**Fan,** p164, C1:38 through C2:9); and a base classifier calculator for developing a learning model for data in a first subset of said N subsets. (**Fan,** p163, C2:11-16, abstract; 'Learning model' of applicant is equivalent to 'progressive modeling' of Fan. 'Base classifier calculator' of applicant is equivalent to 'learning algorithm' of Fan.)

Claim 9

Fan anticipates an ensemble calculator for progressively developing an ensemble model of said database of examples by successively integrating a base classifier from successive subsets of said N subsets. (**Fan,** p166, algorithm

1; 'Ensemble calculator' of applicant is equivalent to the outer loop of the algorithm 1 which begins with 'partition S into K disjoint subsets'. This outer loop develops the 'ensemble model' with each additional S_i.)

Claim 10

Fan anticipates a memory interface to retrieve data from said database and to store data as said inductive learning model is progressively developed (**Fan,** p163, Figure 1; Illustrates a display of remaining training time and accuracy which is equivalent to a 'learning model' being developed over time.); and a graphic user interface to allow a user to selectively enter parameters, to control the progressive development of said ensemble model, and to view results of said progressive development. (**Fan,** p164, C1:26-30 and p169, C2:17-34; 'Allow a user to selectively enter parameters' of applicant is implied by 'users have full control over the learning process' and 'user can easily experiment with different algorithms' of Fan.)

Claim 11

Fan anticipates a memory containing one or more of a plurality of segments of said example data (**Fan,** p164, C1:38 through C2:9; 'Segments of said example data' of applicant is equivalent to 'subset' of Fan.), wherein each said segment of example data comprises data for calculating a base classifier for an ensemble model of said dataset; a base classifier calculator for developing a learning model for data in one of said N segments (**Fan,** abstract; 'Base classifier

calculator' of applicant is equivalent to 'learning algorithm' of Fan.); an ensemble calculator for progressively developing an ensemble model of said database of examples by successively integrating a base classifier from successive ones of said N segments (**Fan,** p166, algorithm 1; 'Ensemble calculator' of applicant is equivalent to the outer loop of the algorithm 1 which begins with 'partition S into K disjoint subsets'. This outer loop develops the 'ensemble model' with each additional S_i.); a memory interface to retrieve data from said database and to store data as said inductive learning model is progressively developed (**Fan,** p163, Figure 1; Illustrates a display of remaining training time and accuracy which is equivalent to a 'learning model' being developed over time.); and a graphic user interface to allow a user to at least one of enter parameters, to control the progressive development of said ensemble model, and at least one of display and printout results of said progressive development. (**Fan,** p164, C1:26-30 and p169, C2:17-34; 'Allow a user to selectively enter parameters' of applicant is implied by 'users have full control over the learning process' and 'user can easily experiment with different algorithms' of Fan.)

Claim 12

Fan anticipates providing a database of example data to be used to process an inductive learning model for said example data, wherein said inductive learning model is derivable by dividing said example data into N segments and using at least one of said N segments of example data to derive a base classifier model (**Fan,** p164, C1:38 through C2:9; 'Segments of said

example data' of applicant is equivalent to 'subset' of Fan.); receiving said database of example data and executing said method of deriving said inductive learning model (**Fan,** p163, C2:11-16, p164, C1:38 through C2:9; 'Learning model' of applicant is equivalent to 'progressive modeling' of Fan. 'Example data' of applicant is equivalent to 'subset' of Fan.); providing an inductive learning model as derived (**Fan,** p163, C1:1 through C2:10); executing an application of an inductive learning model as derived; and receiving a result of said executing said application. (**Fan,** p163, Figure 1; 'Executing' and 'receiving a result' of applicant is equivalent to the output display of Figure 1. of Fan.)

Claim 13

Fan anticipates dividing said dataset into N subsets of data (**Fan,** p164, C1:38 through C2:9); and developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets. (**Fan,** p163, C2:11-16; 'Learning model' of applicant is equivalent to 'progressive modeling' of Fan.)

Claim 14

Fan anticipates dividing said dataset into N subsets of data (**Fan,** p164, C1:38 through C2:9); and developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets. (**Fan,** p163, C2:11-16; 'Learning model' of applicant is equivalent to 'progressive modeling' of Fan.)

Claim 15

Fan anticipates progressively forming an ensemble model of said dataset by sequentially developing a learning model for each of a successive one of said N subsets, until a desired indication of termination has been reached. (**Fan,** p166, algorithm 1; 'Ensemble calculator' of applicant is equivalent to the outer loop of the algorithm 1 which begins with 'partition S into K disjoint subsets'. This outer loop develops the 'ensemble model' with each additional S_i.)

Claim 16

Fan anticipates developing at least one of a current accuracy and an estimated final accuracy, said current accuracy comprising an accuracy of said learning model for said subset being currently developed, said estimated final accuracy comprising an estimated accuracy of said ensemble model of said dataset. (**Fan,** l163, C2:16 through p164, C1:13; 'Subsets being currently developed' of applicant is equivalent to 'intermediate models' of Fan.)

Claim 17

Fan anticipates developing an estimated training time to complete development of said ensemble model. (**Fan,** p166, C1:10-13)

Claim 18

Fan anticipates an overall accuracy that reflects an estimated total amount of reward from said benefits. (**Fan,** p163, C2:16 through p164, C1:13)

Claim 19

Fan anticipates said benefit is not equal for all said examples, said learning comprising a cost-sensitive learning, and said accuracy comprises an overall accuracy that reflects an estimated total amount of reward from said benefits in predetermined units. (**Fan,** p163, C2:16 through p164, C1:13; 'Predetermined units' of applicant is equivalent to 'dollar amounts' of Fan.)

Claim 20

Fan anticipates dividing said dataset into N subsets of data (**Fan,** p164, C1:38 through C2:9); and developing an estimated learning model for said dataset by developing a learning model for a first subset of said N subsets. (**Fan,** p163, C2:11-16; 'Learning model' of applicant is equivalent to 'progressive modeling' of Fan.)

Claim 21

Fan anticipates calculating an estimated accuracy for said leaning model. (**Fan,** p163, C2:17 through p164, C1:13)

Claim 22

Fan anticipates calculating a remaining training time. (**Fan,** p166, C1:10-13)

Claim 23

Fan anticipates progressively, and stepwise (**Fan,** p166, algorithm 1; 'Progressive and stepwise' of applicant is illustrated by the outcome of the 'while' loop of Fan.), forming an ensemble model of said dataset by sequentially using additional said subsets to develop an additional learning model for said subset (**Fan,** p166, algorithm 1; 'Additional said subsets' of applicant is equivalent to 'partition S into K subsets' of Fan.) and incorporating each said additional learning model into an aggregate model to form said ensemble model, wherein said progressive and stepwise forming can be terminated prior to developing an additional learning model for all of said N subsets. (**Fan,** abstract, 'Terminated prior to developing an additional learning' of applicant is equivalent to 'user can terminate training prior to completion' of Fan.)

Claim 24

Fan anticipates said examples carry potentially different benefits, said method further comprising: calculating an estimation of an accumulated benefit for said learning model. (**Fan,** p163, C2:16 through p164, C1:13; 'Accumulated benefit' of applicant is equivalent to 'benefit' of Fan.)

Claim 25

Fan anticipates for a dataset comprising a plurality of elements (**Fan,** p164, C1:38 through C2:9; 'Plurality of elements' of applicant is equivalent to 'subsets S_j' of Fan.), each said element comprising a feature vector (**Fan,** p166, C2:14 through p167 C1:10; 'Feature vector' of applicant is equivalent to 'datasets' of Fan.), said dataset further comprising a true class label for at least a portion of said plurality of elements, said true class labels allowing said dataset to be characterized as having a plurality of classes, dividing at least a part of said portion of said plurality of elements having said true class label into N segments of elements; and learning a model for elements in at least one of said N segments, as an estimate for a model for all of said dataset. (**Fan,** p166, C2:14 through p167 C1:10; 'True class' of applicant is equivalent if the feature is true or not of Fan. For example Fan illustrates 2 different elements which have a 'true' class. They are 'actual donate' and 'actual fraud'.)

Claim 26

Fan anticipates using a second part of said portion of said plurality of elements having said true class label as a validation set for said model. (**Fan,** p164, C1:38 to C2:9; 'Validation set' of applicant is equivalent to 'validation set S_v' of Fan.)

Claim 27

Fan anticipates using said validation set to calculate a predicted accuracy for said model. (**Fan,** p165, C1:4-12; Fan illustrates an equation for determining probability which is equivalent to 'predicted accuracy' of applicant.)

Claim 28

Fan anticipates calculating an estimated training time for learning a model based on a remainder of said N segments. (**Fan,** p166, C1:10-13)

Claim 29

Fan anticipates establishing a benefit matrix associated with said plurality of classes, said benefit matrix defining a benefit for each said element in said dataset as applicable for each said class. (**Fan,** p166, C2:14-34)

Claim 30

Fan anticipates using a validation dataset to measure a validation of said model; and calculating an aggregate benefit for said model, as based on said validation dataset. (**Fan,** p169, C2:1-16; 'Aggregate benefit' of applicant is equivalent to 'total benefit' of Fan.)

Claim 31

Fan anticipates progressively developing an ensemble model by successively learning a model for elements in one of a remaining said N segments, wherein said progressively developing said ensemble model is

terminable at any stage. (**Fan,** p166, algorithm 1 and abstract; 'Ensemble calculator' of applicant is equivalent to the outer loop of the algorithm 1 which begins with 'partition S into K disjoint subsets'. This outer loop develops the 'ensemble model' with each additional S_i. 'Terminable at any stage' of applicant is equivalent to 'user can terminate prior to completion' of Fan.)

Claim 32

Fan anticipates calculating at least one of an accuracy and a remaining training time for said ensemble model. (**Fan,** p163, Figure 1.)

Claim 33

Fan anticipates entering a threshold for at least one of said accuracy and said remaining training time; and automatically terminating said progressively developing said ensemble model whenever said threshold is exceeded. (**Fan,** p166, 2:1-13; 'Threshold' of applicant is equivalent to 'upper and lower bounds' of Fan.)

Conclusion

The prior art of record and not relied upon is considered pertinent to the applicant's disclosure.

-U. S. Patent Publication 20030110038: Sharma

-U. S. Patent Publication 20020103775: Quass

-U. S. Patent 6336106: Evans

-U. S. Patent 6038554: Vig

-'A fully distributed framework for cost-sensitive data mining': Fan, Wang, Yu, Stolfo

-'Distributerd data mining in credit card fraud detection': Chan, Fan, Prodromidis, Stolfo

-'Real time data mining-based intrusion detection': Wenke, Stolfo, Chan, Eskin, Wei, Miller, Hershkop, Zhang

Claims 1-33 are rejected.

Correspondence Information

Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner Peter Coughlan, whose telephone number is (571) 272-5990. The Examiner can be reached on Monday through Friday from 7:15 a.m. to 3:45 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor David Vincent can be reached at (571) 272-3687. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,

Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.)

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Peter Coughlan

8/21/2006